

**Basic Course Information**

Semester	<b>Spring 2020</b>	Instructor	<b>Jesus Rosas</b>
Course Title & #	<b>APLN 106</b>	Email	<a href="mailto:JARosas@IID.com">JARosas@IID.com</a>
CRN #	<b>CCRN #21254</b>	Website	
Room	<b>EC Executive Lab</b>	Office	<b>Imperial Irrigation District</b>
Class Dates	<b>February 18 – June 12, 2020</b>	Office Hours	
Class Days	<b>Tuesdays</b>	Phone #	<b>Cell (760) 455-2619</b>
Class Times	<b>4:00 P.M. to 8:15 P.M.</b>	Contact for absence or emergency	<b>Jesus Rosas 760-455-2619</b>

**Course Description**

The basic principles in the construction, operation, and maintenance procedures associated with substations and switchyards. (nontransferable, AA/AS degree only)

**Student Learning Outcomes**

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

1. Rules & regulations when working with/in substations
2. Supervised construction of Substations
3. Substation & switchyard maintenance

**Course Objectives**

Upon satisfactory completion of the course, students will be able to:

1. Practice standard safety procedures appropriate to the power utility industry.
2. Recognize and deal appropriately with hazardous materials in the power utility industry.
3. Identify and practice safety in substations & switchyards.
4. Recognize T&D construction standards.
5. Identify and practice substation & switchyard maintenance

**Textbooks & Other Resources or Links**

1. Electrical Lineman, Training Committee (2009). *Imperial Irrigation District's Lineman Apprenticeship Training Handbook* Imperial, CA Imperial Irrigation District. ISBN:-
2. Shoemaker, Thomas M. and James E. Mack (2012). *The Lineman's and Cableman's Handbook* (12<sup>th</sup>/e). New York McGraw-Hill. ISBN: 978007174580
3. Bertrand, Forster & Schultz (2000). *Basic Mathematics for Electricity and Electronics* (8<sup>th</sup>/e). The McGraw-Hill Companies. ISBN 0028050223

**Course Grading Based on Course Objectives**

The course grade is based on total points accumulated during the semester. There is a maximum of 450 points. Very limited extra credit points may be available, either through some class participation activity, group work or perfect attendance. Failing to turn in regular assignments will stop you from being able to earn extra credit points and late assignments will have points subtracted.

Final grades are calculated as follows:

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Percentage	Grade
90-100%	A
80-89%	B
70-79%	C
60-69%	D
Below 60%	F

Points	Grade
385-450	A
320-384	B
255-319	C
190-254	D
0-189	F

Grading Rubrics: In addition to the percentages and points listed above the following grading rubric (standards expected) will be used when grading student assignments. The description that best fits your work will be the assigned grade.

Grade	Rubric or Standard Expected
<b>A</b>	Focused and clearly organized. Contains advanced critical thinking and analysis. Convincing evidence is provided to support conclusions. Clearly meets or exceeds assignment requirements.
<b>B</b>	Generally focused with some development of ideas, but may be simplistic or repetitive. Evidence is provided to support conclusions. Occasional grammatical errors. Meets assignment requirements, but does not exceed.
<b>C</b>	Unfocused, underdeveloped, or rambling, but has some coherence. Minimal evidence is provided to support conclusions. Several grammatical errors. Meets minimum assignment requirements.
<b>D</b>	Unfocused, underdeveloped, and/or rambling. Limited evidence is used to support conclusions. Serious grammatical errors that impede overall understanding. Does not address the assignment requirements
<b>F</b>	Unfocused, underdeveloped, and/or rambling. Incomplete or too brief. No evidence is used to support conclusions. Serious grammatical errors that block overall understanding. Does not meet assignment requirements. Minimal to no student effort.

Late assignments will not be accepted. Student will hand in assignment the week it is due.  
Students will not be allowed to take missed, quizzes, mid-term exam or final exam.

### Course Assignments and Instructional Methods

Assignments are designed to elicit your demonstration of critical thinking, understanding and application of the course concepts, and your proficiency in the subject matter.

#### Required Activities or Assignments

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|---|----------|
| 1. Midterm (1)                                  | 100 each |
| 2. Exam (1)                                     | 200 each |
| 3. Homework (15)                                | 10 each  |
| 4. Participation (possible extra credit points) | TBD      |

Teaching Methods: During this class you will have opportunity to participate in a variety of presentation and teaching methods. Lectures, including material not covered in your readings, class and group discussions requiring your active participation, student oral presentations, field trips will supplement your required readings.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement. Out of class assignments for this course includes reading assignments, study time for exams/quizzes, and completion of required course

assignments. Students should actively read the assignment prior to class, bring any questions to class, and take careful notes during class.

### Attendance

- A student who fails to attend the first meeting of a class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. Students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.
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### Academic Dishonesty

- Plagiarism is to take and present as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not clearly understand how to correctly 'cite a source', you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment or using or attempting to use materials, or assisting others in using materials, or assisting others in using materials, which are prohibited or inappropriate in the context of the academic assignment in question. Anyone caught cheating will receive a zero (0) on the exam or assignment, the incident will be reported to Apprenticeship program coordinator, and a document may be placed in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General School Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to the following:
  - Plagiarism
  - Copying or attempting to copy from others during an examination or on an assignment;
  - Communicating test information with another person during an examination;
  - Allowing others to do an assignment or portion of an assignment
  - Use of a commercial term paper service

### Classroom Etiquette

- Students are expected to be actively involved the learning process so failure is not a good choice; apply yourself, study, attend class regularly, ask for help if needed, and always do your best.
- Students will attend class meetings regularly. After second absence the apprenticeship coordinator for IID will be notified.
- Homework: The purpose of homework is to provide students with additional practice to reinforce concepts and to get ready for class. For each chapter in the text book you will answer questions at the end of the chapter each homework assignment is due the following scheduled class meeting.
- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class. These disruptions are considered disrespectful behavior to others in the class and the instructor.
- Food and drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception.
- Disruptive Students: Most of you are here to learn, but some students are not as serious. To preserve a productive learning environment, students who disrupt or interfere with a class may be sent out of the room and told to meet with the apprenticeship coordinator, before returning to continue with coursework. Disciplinary procedures will be followed as outlined in IID policy and Procedure 4350.

### Additional Help

1. You are allowed to ask any journeyman questions pertaining to your homework or drawings or procedures which may be discussed in class.
2. Library Services: All technical manuals pertaining to the equipment covered in class Are in #1 control-room.

### Disabled Student Programs and Services (DSPS)

Non-applicable

### Student Counseling and Health Services

Refer to IID Policy and Procedures

### Student Rights and Responsibilities

Students have the right to experience a positive learning environment; students who disrupt that environment can be asked to leave the class. Faculty and students also have the right of due process. For further information regarding student rights and responsibilities please refer to the IVC General Catalog available online at [www.imperial.edu](http://www.imperial.edu)

### Class Schedule

Below is a list of weekly activities and assignments that will assist you in meeting the course objectives and the Student Learning Outcomes. Please review carefully and often as the list may include reading assignments, exams, field trips, projects, presentations, etc.

DATE	SUBJECT	Homework	ASSIGNMENT DUE
Week 1 02/18/2020	Control & Disposal of Hazardous Waste	Chapter Questions	02/25/2020
Week 2 02/25/2020	Safety in Substations & Switchyards	Chapter Questions	03/03/2020
Week 3 03/03/2020	*Field Trip to Dahlia Substation T & D Construction Standards	Chapter Questions	03/10/2020
Week 4 03/10/2020	Capacitors & Reactors	Chapter Questions	03/17/2020
Week 5 03/17/2020	Circuit Breakers #1 & #2	Chapter Questions	03/24/2020
Week 6 03/24/2020	Control Equipment  High Voltage Terminations	Chapter Questions	03/31/2020

Imperial Valley College Course Syllabus – AP EL 106

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<b>Week 7</b> <b>03/31/2020</b>	<b>MID-TERM</b>	<b>MID-TERM</b>	<b>MID-TERM</b>
Week 8 04/07/2020	High Voltage Terminations Relays #1	Chapter Questions	04/21/2020
<b>Week 9</b> <b>04/14/2020</b>	<b>Spring Break</b>	<b>Spring Break</b>	<b>Spring Break</b>
Week 10 04/21/2020	Relays #1	Chapter Questions	05/05/2020
Week 11 04/28/2020	Relays #2	Chapter Questions	05/05/2020
Week 12 05/05/2020	Relays #2 (continued)	Chapter Questions	05/12/2020
Week 13 05/12/2020	Presentation from Substation Unit Engineer, Robert Sanchez	N/A	N/A
Week 14 05/19/2020	Transformers #1	Chapter Questions	05/26/2020
05/26/2020	Transformers #2	Chapter Questions	06/02/2020
Week 15 06/02/2020	Transformers #2	Chapter Questions	06/09/2020
<b>Week 16</b> <b>06/09/2020</b>	<b>FINAL EXAM</b>	<b>FINAL EXAM</b>	<b>FINAL EXAM</b>